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Building & Highway Material Testing Laboratory

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Job No.: CTCE/BBMP/W.No.07/KRIDL/CEMENT/2014-15 Date: 28.06.2014

TEST REPORT

CLIENT	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	:	Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.
REFERENCE	:	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
SAMPLE ID	:	Cement
SAMPLES SUPPLIED BY	:	AGENCY

The results of the tests conducted on the cement sample are as follows:

Sl.No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-1989
1	a) Initial Setting Time	IS-4031 (Part -5)	160 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5)	495 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part 3) by the Le-Chatelier method	1 mm	Not more than 10 mm
3	Standard Consistency	IS-4031 (Part -4)	27.50 %	-

Note:

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Job No.: CTCE/BBMP/W.No.07/KRIDL/SAND/2014-15 : 28.06.2014

TEST REPORT ON FINE AGGREGATES (SAND)
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 28.06.2014

Material : Sand Total Wt. of Aggregates in gms 2000

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits For Zone-II
10	0	0	0	100	100
4.75	98	4.90	4.90	95.1	90-100
2.36	254	12.70	17.60	82.4	75-100
1.18	505	25.25	42.85	57.2	55-90
600 Micron	409	20.45	63.30	36.7	35-59
300 Micron	515	25.75	89.05	11.0	8-30
150 Micron	168	8.40	97.45	2.6	0-10

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Gradation/2014-15

30.06.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 30.06.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **25600**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	995	995	3.9	96.1	95-100
22.4	5525	6520	25.5	74.5	60-80
11.2	5600	12120	47.3	52.7	40-60
4.75	4010	16130	63.0	37.0	25-40
2.36	3990	20120	78.6	21.4	15-30
0.600	2585	22705	88.7	11.3	8-22
0.075	2610	25315	98.9	1.1	0-8

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Gradation/2014-15 30.06.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 30.06.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): 28085

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	1015	1015	3.6	96.4	95-100
22.4	9026	10041	35.8	64.2	60-80
11.2	5114	15155	54.0	46.0	40-60
4.75	4010	19165	68.2	31.8	25-40
2.36	3462	22627	80.6	19.4	15-30
0.600	2148	24775	88.2	11.8	8-22
0.075	2345	27120	96.6	3.4	0-8

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Gradation/2014-15 30.06.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 30.06.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **29055**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	968	968	3.3	96.7	95-100
22.4	9125	10093	34.7	65.3	60-80
11.2	5236	15329	52.8	47.2	40-60
4.75	4157	19486	67.1	32.9	25-40
2.36	3528	23014	79.2	20.8	15-30
0.600	2457	25471	87.7	12.3	8-22
0.075	2689	28160	96.9	3.1	0-8

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GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

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Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 30.06.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): 29485

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	996	996	3.4	96.6	95-100
22.4	9125	10121	34.3	65.7	60-80
11.2	5127	15248	51.7	48.3	40-60
4.75	4236	19484	66.1	33.9	25-40
2.36	3687	23171	78.6	21.4	15-30
0.600	2798	25969	88.1	11.9	8-22
0.075	2531	28500	96.7	3.3	0-8

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GRADATION FOR WMM
MORTH TABLE-400-11

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Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 30.06.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): 29915

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	995	995	3.3	96.7	95-100
22.4	9287	10282	34.4	65.6	60-80
11.2	5313	15595	52.1	47.9	40-60
4.75	4218	19813	66.2	33.8	25-40
2.36	3624	23437	78.3	21.7	15-30
0.600	2517	25954	86.8	13.2	8-22
0.075	2419	28373	94.8	5.2	0-8

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GRADATION FOR WMM
MORTH TABLE-400-11

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Agency : **Technical Manager (West),** KRIDL, Bangalore.

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Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 30.06.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): 26025

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	747	747	2.9	97.1	95-100
22.4	6459	7206	27.7	72.3	60-80
11.2	4867	12073	46.4	53.6	40-60
4.75	3749	15822	60.8	39.2	25-40
2.36	3521	19343	74.3	25.7	15-30
0.600	4152	23495	90.3	9.7	8-22
0.075	1845	25340	97.4	2.6	0-8

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GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 30.06.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): 26745

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	995	995	3.7	96.3	95-100
22.4	7835	8830	33.0	67.0	60-80
11.2	5174	14004	52.4	47.6	40-60
4.75	5158	19162	71.6	28.4	25-40
2.36	2592	21754	81.3	18.7	15-30
0.600	2249	24003	89.7	10.3	8-22
0.075	2027	26030	97.3	2.7	0-8

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GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 30.06.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **26305**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	715	715	2.7	97.3	95-100
22.4	6495	7210	27.4	72.6	60-80
11.2	4784	11994	45.6	54.4	40-60
4.75	3669	15663	59.5	40.5	25-40
2.36	3535	19198	73.0	27.0	15-30
0.600	4233	23431	89.1	10.9	8-22
0.075	1889	25320	96.3	3.7	0-8

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GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 30.06.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **26850**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	828	828	3.1	96.9	95-100
22.4	6679	7507	28.0	72.0	60-80
11.2	4893	12400	46.2	53.8	40-60
4.75	3675	16075	59.9	40.1	25-40
2.36	3526	19601	73.0	27.0	15-30
0.600	4186	23787	88.6	11.4	8-22
0.075	2028	25815	96.1	3.9	0-8

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/AIV/2014-15 30.06.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	30.06.2014

Sl No.	Details	Trial No.			Average
		1	2	3	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	381	382	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	81	82.5	80	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	298.5	302	
4	Aggregate Impact value = percent fines	21.32	21.65	20.94	
	100* (W_2/W_1)%				**21.30**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/AIV/2014-15 30.06.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	30.06.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	382	385	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	81	84	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	301	301	
4	Aggregate Impact value = percent fines	21.20	21.82	22.22	
	100* (W_2/W_1)%				21.75

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	30.06.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	383	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	84	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	299	299	
4	Aggregate Impact value = percent fines	21.52	21.93	22.34	
	$100^* (W_2/W_1)\%$				21.93

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	30.06.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	384	386	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	87	88	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	299	299	
4	Aggregate Impact value = percent fines	22.14	22.54	22.74	
	100* (W_2/W_1)%				22.47

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	30.06.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	382	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	81	83	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	299	299	
4	Aggregate Impact value = percent fines	21.32	21.73	22.14	
	$100^* (W_2/W_1)\%$				21.73

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/S-T/2014-15 30.06.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of Work	Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	30.06.2014

Result : Flakiness Index = **12.29%**

Elongation Index = **13.32%**

Result : Combined Flakiness & Elongation index 25.61%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Shape.T/2014-15 . : 30.06.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, Bangalore.
Name of Work	: Improvements of Roads at Ward No.07, Byatarayanapura in Kallappa, Munagurappa and Hoysala Layout, BBMP, Bangalore.
Reference	: AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Wet Mix Macadam
Date of Testing	: 30.06.2014

Result : Flakiness Index = **12.35%**

Elongation Index = **13.46%**

Result : Combined Flakiness & Elongation index **25.81%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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